AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Currently Amended)** A long wavelength vertical cavity surface emitting laser comprising:

a substrate;

a first mirror situated on said substrate;

an active region situated on said first mirror, the active region being configured to emit energy at a wavelength greater than 1200 nm;

a second mirror situated on said active region;

a first electrical contact situated on said first mirror; and

wherein:

said first mirror comprises a plurality of pairs of layers; and

one layer of at least one pair of the plurality of pairs of layers is an oxidized layer, wherein said one layer has an aluminum content of about 52% before being oxidized.

2. **(Original)** The laser of claim 1, wherein said substrate comprises InP.

3. **(Original)** The laser of claim 2, wherein the oxidized layer comprises at least one of a group comprising oxidized InAlAs, InAlGaAs, AlAsSb, AlGaAsSb, AlGaPSb and AlPSb.

4. **(Original)** The laser of claim 3, wherein one layer of at least one pair of the plurality of pairs of layers comprises InP.

5. **(Original)** The laser of claim 4, wherein:

said second mirror comprises a plurality of pairs of layers; and

one layer of at least one pair of the plurality of pairs of layers of said second mirror comprises InP.

6. **(Original)** The laser of claim 5, wherein one layer of at least one pair of the plurality of pairs of layers of said second mirror comprises InGaAsP.

7. **(Original)** The laser of claim 5, wherein one layer of at least one pair of the plurality of pairs of layers of said second mirror comprise one of a group comprising InGaAsP, lnAlAs, lnAlGaAs, AlAsSb, AlGaAsSb, AlGaPSb and AlPSb.

8. **(Currently Amended)** A long wavelength vertical cavity surface emitting laser comprising:

a substrate;

a first mirror proximate said substrate and having a plurality of layers including at least one pair of layers having ~~an InP~~ a non-oxidized AlGaInAs layer and an oxidized layer, wherein the oxidized layer comprises at least one of oxidized InGaAsP, InAlAs, InAlGaAs, AlAsSb, AlGaAsSb, AlGaPSb or AlPSb;

a cavity proximate to said first mirror;

a second mirror proximate to said cavity; and

at least two contacts configured to cause current to flow through at least a portion of the vertical cavity surface emitting laser.

9. **(Original)** The laser of claim 8, wherein said first mirror is proximate to an InP substrate.

10. **(Currently Amended)** The laser of claim 9, wherein the cavity comprises one or more quantum wells configured to emit energy at ~~an output of the laser has~~ a wavelength greater than 1200 nm.

11. **(Original)** The laser of claim 10, wherein said second mirror comprises a plurality of layers having at least one InP layer.

12. **(Original)** The laser of claim 11, wherein said cavity has at least one quantum well.

13. **(Original)** The laser of claim 12, wherein said second mirror comprises a partially oxidized layer for confining current.

14. **(Original)** The laser of claim 13, further comprising:

a first electrical contact on said second mirror; and

a second electrical contact on the substrate.

15. **(Original)** The laser of claim 13, further comprising:

an intra-cavity contact layer situated between said first mirror and said cavity;

a first contact on said second mirror; and

a second contact on said intra-cavity contact layer.

16. **(Currently Amended)** A long wavelength vertical cavity surface emitting laser comprising:

a substrate comprising InP;

a first stack of layers formed on said substrate, the first stack of layers including one or more non-oxidized layers of InP;

a quantum well region formed on said first stack of layers, the active region being configured to emit energy at a wavelength greater than 1200 nm;

a second stack of layers formed on said quantum well region; and

at least two contacts configured to cause current to flow through at least a portion of the vertical cavity surface emitting laser;

wherein approximately every other layer of said first stack of layers is ~~at least partially~~fully oxidized and the oxidized layers comprise an oxide of InAlGaAs, AlGaAsSb, AlGaPSb, or AlPSb.

17. **(Original)** The laser of claim 16, wherein approximately every other layer of said first stack of layers comprises InP.

18. **(Original)** The laser of claim 17, wherein each layer of said first and second stacks of layers has a thickness of approximately one-fourth of an optical wavelength between 1200 nm and 1800 nm.

19. **(Canceled)**

20. **(Original)** The laser of claim 19, wherein approximately every other layer of said second stack of layers comprises InP.

21. **(Original)** The laser of claim 20, wherein said first and second stacks of layers are distributed Bragg reflectors.

22. **(Original)** The laser of claim 21, wherein said second mirror comprises a partially oxidized layer for confining current.

23. **(Currently Amended)** A method for making a vertical cavity surface emitting laser, comprising:

forming a first stack of layers on a substrate, wherein one or more of the layers in the first stack of layers are InP layers;

forming a quantum well region on the first stack of layers;

forming a second stack of layers on the quantum well region;

forming at least one trench through the second stack of layers, the quantum well region and the first stack of layers nearly up to the substrate; and

fully oxidizing ~~some~~ a plurality of layers of the first stack of layers via the at least one trench.

24. **(Original)** The method of claim 23, wherein the substrate comprises InP.

25. **(Original)** The method of claim 24, wherein some layers of the first stack of layers comprise InP.

26. **(Original)** The method of claim 25, wherein some layers of the first stack of layers comprise a material from a group comprising InAlAs, InAlGaAs, AlAsSb, AlGaAsSb, AlGaPSb and AlPSb.

27. **(Original)** The method of claim 26, wherein some of the layers of the second stack of layers comprise InP.

28. **(Original)** The method of claim 27, wherein the thickness of each layer of the first and second stacks of layers is approximately one-fourth of an optical wavelength ranging from about 1200 nm through 1800 nm.

29. **(Original)** The method of claim 28, wherein:

the first stack of layers comprises a plurality of pairs of layers; and

at least one pair of the plurality of pairs of layers has an oxidized layer and an InP layer.

30. **(Original)** The method of claim 29, oxidizing a layer in the second stack of layers for confining current in the laser.

31. **(Currently Amended)** A vertical cavity surface emitting laser comprising:

a first mirror having about six ~~or less~~ pairs of layers, wherein ~~at least~~ one layer of ~~the~~each of the about six pairs of layers include a non-oxidized layer comprising InP or AlGaInAs and the other layer of the pairs of layers comprises an oxidized InGaAsP, InAlAs, InAlGaAs, AlAsSb, AlGaAsSb, AlGaPSb or AlPSb ~~first mirror includes InP and one layer of each pair of layers is an oxidized layer wherein each oxidized layer in each pair of layers has less than 60 percent aluminum before being oxidized~~;

a cavity proximate to said first mirror;

a second mirror proximate to said cavity and

at least two contacts configured to cause current to flow through at least a portion of the vertical cavity surface emitting laser.

32. **(Canceled)**

33. **(Currently Amended)** ~~A~~ The laser of claim 31, wherein ~~a second layer in each pair of layers is~~the non-oxidized layer is InP.

34. **(Canceled)**

35. **(Currently Amended)** ~~A~~ The laser of claim 1, wherein the first mirror has six or fewer ~~plurality of pairs of layers comprises at least six~~ pairs of layers.

36. **(Currently Amended)** ~~A~~The laser of claim 8, wherein the plurality of layers of the first mirror has ~~comprises at least~~ six or fewer pairs of layers.

37. **(New)** The method of claim 23, wherein the step of forming the at least one trench comprises forming a plurality of spaced apart trenches and wherein the plurality of layers is substantially fully oxidized by subjecting the laser to oxidative conditions until the material between the spaced apart trenches is oxidized.